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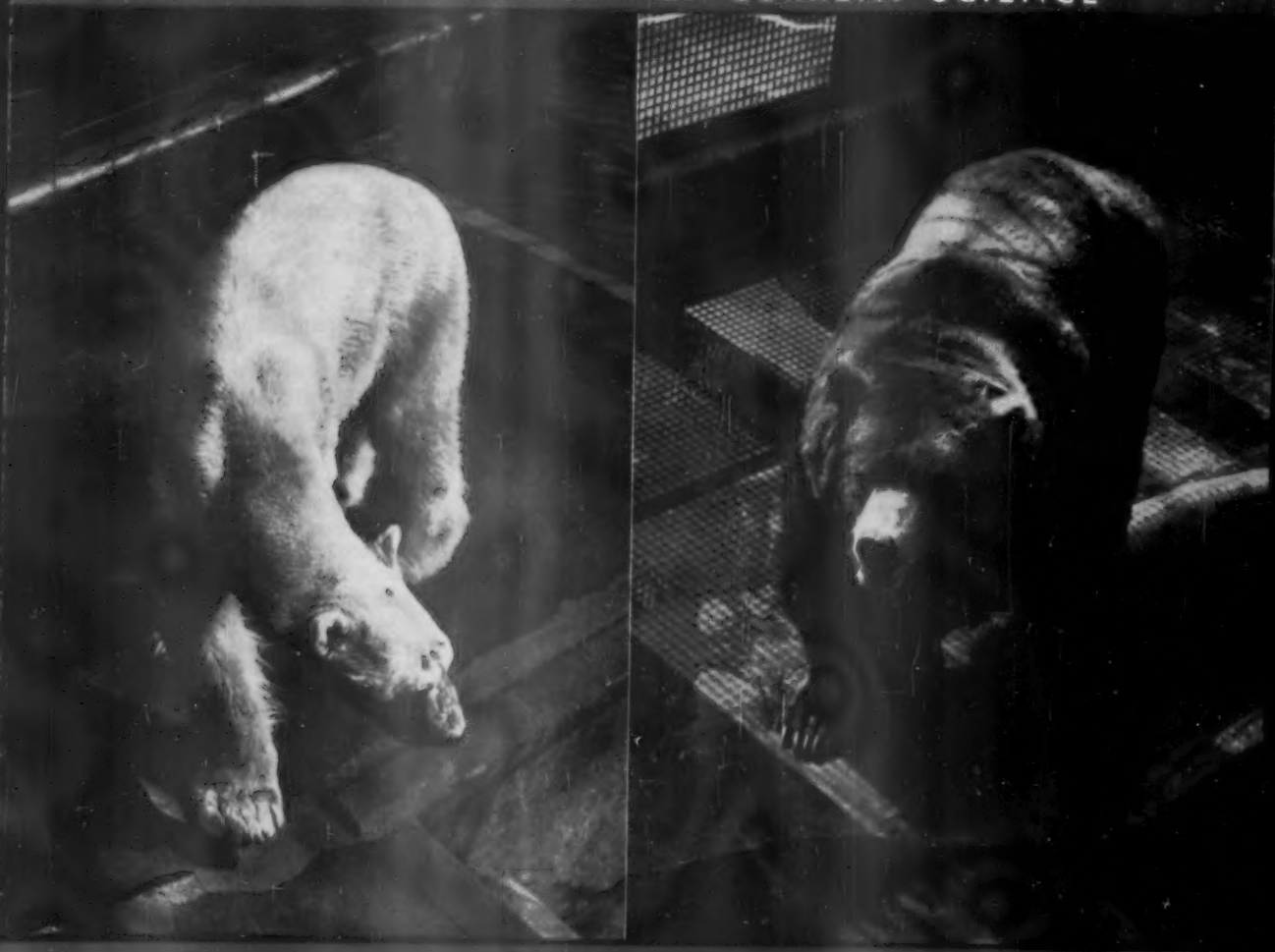
# SCIENCE NEWS LETTER

THE WEEKLY SUMMARY OF CURRENT SCIENCE



## Climatic Effect?

See Page 362

A SCIENCE SERVICE PUBLICATION

# What General Electric people are saying . . .

## C. H. LINDER

*Mr. Linder is Vice President in charge of Engineering*

". . . We are moving today, I believe, in industry and education, toward a common area of agreement on what constitutes the right kind of education. Industry, which in the past might rightly have been accused of sometimes taking a narrow view of the proper goals of education, is taking a broad-gauge view. We are increasingly recognizing the need for people who have had an education that has both variety and depth in engineering, science, and the humanities.

Most certainly in industry, particularly in our technical work, we need people who are educated, not just informed. Any attempt on the part of a secondary school, and more particularly a college or university, to give instruction in current engineering practice rather than a training in the basic principles is doomed to failure from the beginning if for no other reason than that technology is changing and shifting so rapidly.

With the increase in volume and complexity of our technology, the need for people in engineering and applied science with advanced degrees has become greater and, in my opinion, during the years that are immediately ahead our economy is going to require a continued increase in the percentage of our technical people with advanced degrees.

The role of the man trained in applied science is becoming of ever-increasing importance in engineering. In fact, it is my belief that many of the engineering curricula are going, during the coming years, to tend to include a larger and more significant element of training in applied science rather than in many of the design or engineering practice courses now included. Industry does not expect the secondary schools and colleges to create specialists in specific knowledge, but rather all-round well-trained people who have understanding of basic principles. As individuals find interest and challenge in specific areas the specialists we need will become available.

*at the University of the State of N. Y. Albany*

## J. P. DITCHMAN

*Mr. Ditchman is with the Lamp Division*

". . . Light—fundamental to farm production—is becoming the key to farm-crop control. Scientific use of lighting promises more startling benefits for mankind than some other areas of technology that are much more publicized.

Although the relationship of light to life has long been known, only recently have we learned enough about the way light enters the life process to apply it commercially. Just a few applications have begun to multiply the productive capacity on the farms, but what has happened so far has convinced many scientists and businessmen that great things are ahead. Even the farmer is having difficulty maintaining his customary reserve.

Areas of hazard, formerly accepted as unavoidable, are on their way to becoming areas of control. For management of radiant energy in the interest of better crops and favorable market timing has begun.

As our experience broadens, we may well be prepared to extend what we know about familiar problems to the newer, less familiar ones. Most of us naturally think of lighting in terms of human uses. The lightmeter is calibrated for human seeing and film sensitivity. But in dealing with light for plants, animals, insects, fish, fowl, and game, we must think in terms of only the specific energy relevant to each.

In this vast field, there's much more to find out. Each day we learn how to make more and better food for the undernourished peoples of the world. Our gains in the past two decades have been tremendous. The future holds much promise.

*G. E. Review*

## R. S. NEBLETT

*Mr. Neblett is Manager—Marketing, Turbine Division*

". . . The electrical industry today is producing twelve times as much power per year with but five times the fuel needed thirty-three years ago.

This improvement in fuel consumption has not resulted from the work of any one group, but rather from the united efforts of the manufacturers of turbine-generators, boilers, and auxiliaries; power plant designers; and, above all, the faith, daring, and enterprise of the owners of the power plants. Specifically the improvement may be credited to higher turbine-generator efficiency, to the increased pressures and temperatures at which power plants have been built, to the use of reheat and regenerative cycles, to the increase in unit sizes, to the improvement in component efficiencies, and to the improved operation of the plants themselves.

The pressure at which steam turbines have been operated has doubled at least every 12 years, and the temperature has increased over this 50-year period on almost a straight line at 12 F per year.

The economy with which power has been produced, that is the kilowatt-hour per pound of coal, has improved from 2 to 3 per cent per year over this period. This rate of improvement, as expected, has and will continue to slow down somewhat as time goes on.

Therefore, whether coal, oil, gas, or atomic energy is used as the fuel, or even if the heat of the sun shining down on a reflector is the heat source, I believe you will be using a turbine to convert such heat energy into electric energy for a good many years to come.

*at the American Power Conference Chicago*

MEDICINE

# Drug for Valley Fever

**The anti-fungus chemical, ethyl vanillate, found to give good results against Valley Fever, for which there has previously been no satisfactory treatment.**

➤ ONE OF a group of anti-fungus chemicals useful for preserving foods has turned out to be helpful for some patients with coccidioidomycosis. Valley Fever is the common name for the disease in California because of its prevalence in the San Joaquin Valley.

The chemical is ethyl vanillate.

Good results in six out of 12 patients treated with it are announced by Drs. Marshall J. Fiese, Jerome Radding, Stephen Cheu and Owen K. Steinbach of the Veterans Administration Hospital, Fresno, Calif., in a preliminary report to the Journal of the California Medical Association, *California Medicine* (May).

Three of the six are "cured," the doctors report. The other three are "doing well," and apparently the disease has been arrested in them.

One patient was dying when first seen by the doctors, and a short period of treatment did not help him. The other failures were also due to the fact that the patients could not be given enough of the drug.

This is apparently the chief drawback to the chemical. It must be given by mouth and to get enough of it to do much good, the patient must take well over an ounce a day. This means swallowing 22 large capsules every six hours. A healthy person might not have any trouble with this but, unfortunately, the very Valley Fever patients who most need the new drug are hardly able to keep any food down, or may be too sick to realize the necessity for taking so many big capsules, or too weak to do so. The drug itself is irritating to the stomach, which further adds to the difficulty.

Heretofore, however, there has been no satisfactory treatment for Valley Fever. The disease is caused by the fungus, *Coccidioides immitis*, which first gets into the lungs. For the lung disease, rest in bed is enough to bring recovery to most patients. But when the disease spreads to other parts of the body it has been "all but inaccessible to help," the VA doctors point out. Abscesses and ulcers and meningitis may develop in these later stages.

Discovery that ethyl vanillate would kill the Valley Fever fungus in the test tube and that it helped patients with another disseminated fungus disease, histoplasmosis, led the VA doctors to try it for Valley Fever patients. At first the chemical was being made only on a laboratory scale, so they could not treat many patients and could not give those enough of it. Now it is being marketed by E. R. Squibb and Sons and there is enough of it.

In spite of its being useful only in certain types of Valley Fever, the VA doctors think it shows that the disease is not necessarily incurable and may point the way to a better medicine.

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MEDICINE

## Cancer Cells Good for Growing Polio Viruses

➤ HUMAN CANCER cells removed from the body make good material for growing and breeding human polio viruses in the laboratory. In the course of their growth, the polio viruses completely destroy the cancer cells.

These findings are from studies by Drs. George O. Gey and F. B. Bang, Mrs. Margaret Gey and Max Stohler of the Johns Hopkins University, Baltimore, and Drs. William F. Scherer and Jerome T. Syverton of the University of Minnesota. The studies are reported by the American Cancer Society which, with the National Foundation for Infantile Paralysis and the U. S. National Cancer Institute, helped finance the cancer research.

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DENTISTRY

## Thyroid Gland Linked With Decay of Teeth

➤ DISCOVERY THAT the activity of the thyroid gland in the neck has considerable influence on whether or not teeth decay has been reported by Drs. Joseph C. Muhler and William G. Shafer of Indiana University. If the gland is not active enough, susceptibility to tooth decay increases.

In rats, at least, dried thyroid material was as effective as sodium fluoride in reducing tooth decay, these scientists found. And when dried thyroid was given with fluoride, decay was reduced about 55% more than when dried thyroid or fluoride was given alone.

Cutting down the activity of the thyroid gland by giving the anti-thyroid chemical, thiouracil, decidedly increased the amount of tooth decay in the rats. In fact, when this chemical was given, fluoride in concentrations otherwise enough to cut tooth decay 20% had no effect.

The thyroid presumably exerts its anti-caries effect by stepping up body metabolism so that saliva flow is increased. This, according to one theory, cuts down tooth decay because the saliva promptly neutralizes the tooth-enamel-attacking acid.

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*RADAR "EYES—To knock down enemy interceptors at night or in bad weather, Stratojet bombers now carry tail cannon, shown here being given a final inspection.*

AERONAUTICS

## Jet Bomber's Tail Gets 20-MM Cannon "Stinger"

➤ A "STINGER" has been added to the tail of the Air Force's B-47E to discourage enemy interceptors from attacking the jet bomber from the rear.

The stinger is a remote controlled tail turret system aimed by radar and fired by an electronic "brain." The system works at night and in fog, as well as on sunny days.

Developed by General Electric Company's aeronautics and ordnance systems division, Johnson City, N. Y., the radar tracks a plane approaching from the rear as the bomber zips along at 600 miles an hour. It feeds tracking information to the computer, which decides when to fire the twin 20-mm tail cannon at the enemy interceptor.

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AGRICULTURE

## Foresee Improvement in World Coffee Situation

➤ THE WORLD coffee situation should improve in the next two years, the Department of Agriculture has predicted.

Coffee production prospects for 1954-55 appear "more promising" than present world buying might indicate, Agriculture experts declared in a special circular issued by the Foreign Agricultural Service. The expected drop in Brazil's coffee production again may be almost offset by larger crops in other parts of the world.

Additional trees planted during the past five years, now coming into production in several countries, also make the outlook for 1955-56 brighter.

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SURGERY

# Ulcers in Extra Stomach

▶ A RARE case of a young woman with two stomachs—and many ulcers in one of them—has been reported by Drs. Howard W. Owen, Colin B. Holman and James T. Priestley of the Mayo Foundation, Rochester, Minn.

The second, or duplicate, stomach was discovered in X-ray examinations made in search for possible ulcers or other causes of the attacks of pain and blood passing the patient suffered.

She had had such attacks once or twice a year since the age of four. At the age of 20, the attacks became more frequent. Examinations and tests, including X-rays and an operation to explore the abdomen surgically, did not show any abnormality.

Clue to the existence of the duplicate stomach came when the patient was being X-rayed again, this time at the Mayo Clinic. During this examination, the roentgenologist was disturbed to find some of the chalky barium mixture, given the patient to make the stomach outlines show on the X-rays, was apparently leaking from an opening just below the normal opening of the stomach to the small intestine.

He had been pressing over this region with his fingers, in order to make the barium cover and thus show every bit of the stomach and its opening. And he thought at first there might have been an ulcer there which his pressure had perforated.

Then he saw that the barium was flowing along parallel to the opening from the stomach to intestine and back along the outer curve of the stomach. Obviously, there were two openings into the intestine and two stomach structures.

At a second operation, the stomach again looked perfectly normal. But this time, with the X-rays giving the clue, the surgeon was able to feel a tubular structure running along the outside of the stomach all the way to the esophagus, or farther, where the food passage from the mouth enters the stomach.

The surgeon then cut across the small intestines and saw two distinct pyloric rings, or openings to the intestine. It was just like "looking directly at the end of a double-barreled shotgun," he reported.

The tube-like structure, which was the duplicate stomach, was cut away. Examination showed it had been the source of the bleeding and that it had many small ulcers.

With the ulcerated second stomach removed, the patient recovered and has been in good health for the two years since the operation.

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PSYCHOLOGY

# Learn Languages Young

▶ CHILDREN SHOULD learn additional languages when they are young, studies by Dr. Wilder G. Penfield, brain surgeon and director of the Montreal Neurological Institute, have suggested. Dr. Penfield stated that learning a language is the human brain's first miracle.

The mechanism of speech is located in a small area normally on the left side of the brain. Injury to this area renders the patient speechless. In a year, speech may return as the other side of the brain takes over.

From studies made during the course of therapeutic surgery on humans, Dr. Penfield has found that children can learn a second or even third language without any effort. They must be associated with those speaking the other language before they reach the 10 to 14 age group. The little child develops speech as a series of conditioned reflexes to get what he wants. In the appropriate surroundings, he will readily use the words he has learned by association, for example, dog, or hund, or chien.

In bilingual Canada, this knowledge of the language-learning process could be readily applied, Dr. Penfield believes. The main thing is to let children hear language properly spoken at an early age. He points out that the brain is a living mechanism going through inexorable changes, and it is soon senescent in regard to learning languages.

Dr. Penfield has just relinquished two major posts, to free himself from administrative duties that keep him from research. He will devote more time to study of the temporal lobe, the organization of speech, the mechanisms of epilepsy, memory and consciousness.

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INVENTION

## Camera Would Take Fast Flash Pictures

▶ YOU COULD make rapid-fire indoor pictures of your children at play if some company would manufacture a new type of camera now patented.

The camera would resemble some of the popular bellows-type "candid" cameras now on the market, but it would permit you to shoot eight flash pictures almost as fast as you could roll the film.

Unless you can afford expensive and often cumbersone flash equipment that uses a single flash bulb over and over, you must change the flash bulb after each exposure. The new camera gets around this by providing two flash reflectors, each of which houses four flash bulbs.

The bulbs are fired individually. When the film is wound, an unfired bulb is switched to the shutter mechanism. Thus the bulbs are "changed" automatically as the film is wound.

In action-packed basketball games and other sporting events, such a camera would be of great aid to photographers who sometimes miss good shots while getting ready for the next picture.

Patent No. 2,671,387 was issued to Thomas C. Knight of Grosse Point Woods, Mich., on his camera apparatus.

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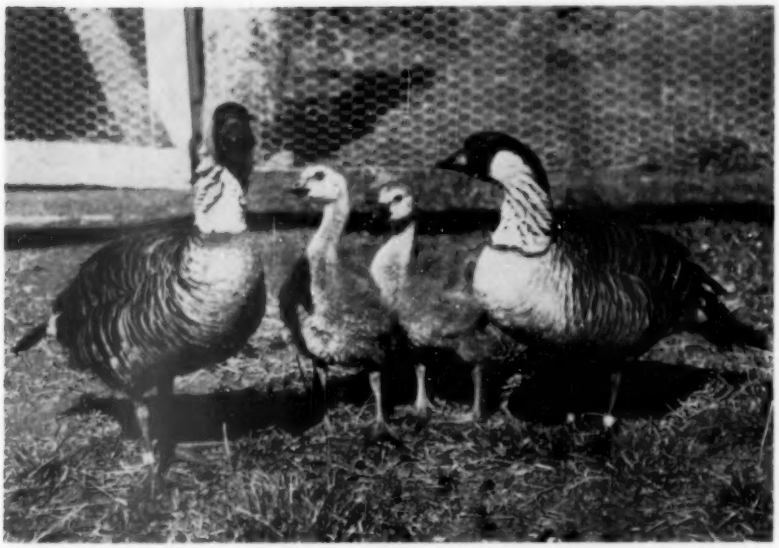

*NO LONGER GONE GOOSE—The Hawaiian nene, said to be the rarest bird in the world after the whooping crane of North America, seems to be making a comeback in his fight for existence.*

BIOLOGY

# Hawaiian Nenes

**Once thought on the way to extinction, the Hawaiian nene population is now estimated at 68, all but 16 of which are in Hawaii. Special pens have been established for them.**

▶ THE HAWAIIAN nene, which looked like a gone goose just a few years ago, now seems to be winning its battle for survival.

Four years ago, the world population of this attractive, pugnacious goose had reached an all-time low of 30 to 54 scattered throughout the mountains of the island of Hawaii, and 24 in captivity. Despite vigorous measures to save the bird, conservationists had begun to lose hope for its continued existence.

This spring, however, four goslings were hatched in the special pens established for the birds at Pohakuloa, Hawaii, 6,500 feet up a mountainside.

The nene population is now estimated at 68, all but 16 of which are in America's mid-Pacific territory. This is probably only a fraction of one day's bag during the hunting season in the early part of the century, when the nene flourished, but it gives hope that the goose is finally making his comeback.

An important part of the credit for saving the nene belongs to a few devoted conservationists who aroused officials to the bird's plight and to a Hawaiian rancher and businessman, Herbert C. Shipman. Mr. Shipman has one of the three captive flocks in the world, and it was from a pair of his birds which he lent to the Pohakuloa project in 1949 that the present flock of 14 has grown.

The other captive flock, totaling 16 birds, is located at the Severn Wildfowl Trust at Slimbridge, England. This flock was started from three breeders from the Shipman ranch. Mr. Shipman sent one of the birds to the Wildfowl Trust by air express. The rancher's own flock contains six birds.

It is not definitely known what started the nene on the downgrade, but destruction by man seems to be an important factor. John R. Woodworth, Territorial Wildlife conservationist, believes that the wild pig and wild dog also had a considerable part in the damage.

The nene is a fearless fighter during the breeding season and will attack anything that seems to threaten his young. The nene puts his head on the ground, hisses, bites with his bill and tries to beat the intruder with his wings.

When the nene was plentiful, the hunting season was in January, a month when the bird was flightless. He was easy prey for trigger-happy marauders.

The nene mates in March. Pairs normally do not produce young until they have reached three or four years of age. They produce a clutch of between three and six eggs, which take about a month to hatch.

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GENERAL SCIENCE

## Visa Application Is Denied Nobelist Dirac

▶ THE VISA application of Dr. P. A. M. Dirac, England's famed 1933 Nobel prize winner in physics, has been denied, SCIENCE SERVICE has learned.

Dr. Dirac was scheduled to come to the U. S. this fall as a visiting professor in theoretical physics at the Institute for Advanced Study, Princeton, N. J., as he has been doing on and off since 1934. He was also to have spoken at Columbia University's bicentennial celebration.

One reason for the visa refusal, it is believed, is Dr. Dirac's attendance at a scientific meeting in Russia shortly after the war.

Dr. Dirac has held the highly prized chair of Lucasian Professor of Mathematics at Cambridge University, England, since 1932. He was doing graduate work at Cambridge when the great blaze of advance in theoretical physics was set alight in 1925 by Dr. Werner Heisenberg, the 1932 Nobel prize winner in physics.

Developing his own mathematics, Dr. Dirac produced a still more advanced system of quantum mechanics, which he announced in 1928. Perhaps Dr. Dirac's most strikingly original and successful contribution is his relativistic theory of the electron.

The Institute for Advanced Study reported in May that Dr. Dirac was one of seven world-famed physicists with whom it had made "arrangements for a continuing or recurrent association." When asked about the recent denial, a spokesman for the Institute said that "now is not the time for publicity" concerning the visa refusal.

The State Department's visa division admits that there has been much "interest in the case," but refuses to comment further.

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GEOPHYSICS

## Make Rain by Seeding Clouds With Salt

▶ CLOUD SEEDERS may some day make rain by throwing common table salt into clouds.

This is foreseen from studies being made of how bursting bubbles throw salt particles into the air. The tiny sea water bubbles, as they break, form even tinier jets. It is these jets that eject the salt-containing droplets, Alfred H. Woodcock of the Woods Hole Oceanographic Institution, Woods Hole, Mass., has found.

C. F. Kientzler, A. B. Arons and D. C. Blanchard, also of the Institution, collaborated in the motion-picture studies of how small bubbles explode.

Many meteorologists now believe that natural salt particles in the air are rain-making agents. The experiments were sponsored by the Office of Naval Research.

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PSYCHOLOGY

## Typical Sex Offender Found Shy Introvert

➤ THE TYPICAL sex offender is more likely to be shy, introverted and religiously-inclined than brutal and violent.

This is indicated in a psychological survey of a group of sex offenders at the Metropolitan State Hospital by Dr. James Marsh, psychologist at the University of California at Los Angeles Medical School.

The survey shows that sex offenders, in contrast to a comparison group of students, tend to shy away from group activities and dislike parties. Many are unusually fearful of lightning and earthquakes and apprehensive in the dark.

The majority read the Bible and pray frequently. In general they have a strong moral sense. They dislike "dirty" stories and burlesque shows. They do not believe in women smoking and think "drinking" is wrong, although most have used alcohol excessively.

Most of them are conscience-stricken about their sex offenses. In many instances, the "victim" was found to be the initiator of contacts and often maintained sexual relationships over a period with an offender, who because of fear or guilt wished to terminate the relationship.

The key to their difficulties seems to lie in unfortunate family relationships. Their childhood was marked by broken homes or consistent family discord. Many have never married and, in fact, are afraid of women. A majority of the married ones have had extreme marital difficulties. Their problems result in a deep seated neurosis.

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MEDICINE

## New, Longer Lasting TB Drug on Trial in Patients

➤ A NEW drug for fighting tuberculosis is now on trial in a group of some 40 or more patients, Drs. Helen C. Dickie and Frank C. Larsen of the University of Wisconsin Medical School, Madison, Wis., announced at the meeting of the National Tuberculosis Association in Atlantic City.

There is hope that the new drug will be even more effective than isoniazid because it is absorbed more slowly and stays in the blood serum longer, but it is too early yet to be sure about this.

The new drug has no name so far and is called by its laboratory title of RO-24969. It is derived from isoniazid and was developed in the laboratories of Hoffmann-La Roche, Inc., in Nutley, N. J.

So far, the drug has shown no toxic action and is as effective against tuberculosis as isoniazid.

Because no one knows yet whether tuberculosis germs will develop resistance to the new drug, the Wisconsin doctors advise using it with streptomycin or, preferably, with PAS.

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*A NEW FIBER—Long fibers can be obtained easily from the cattail, the tall, spiked plant that grows in swampy areas. Leland Marsh of Syracuse University is shown here examining some of the strands.*

AGRICULTURE

# Predict Cattail Growing

**Harvesting cattails may some day be a profitable business for farmer's swampy lands. Raising this spiked plant could help to solve the world's food problems, it is suggested.**

➤ HARVESTING CATTAILS growing in swampy areas will become a highly profitable business some day, two Syracuse University plant scientists have predicted.

Swamp land may turn out to be as valuable as some of the golden wheat fields of the Middle West, Dr. Ernest Reed, chairman of the University's department of plant sciences, and Leland C. Marsh of the department's Cattail Research Center believe. The center was established after research showed that the tall spiked plant has almost unlimited uses.

The world's food problems could be solved in part by growing cattails on a large scale, Dr. Reed said. This plant is known to botanists as *Typha*. Laymen sometimes call it a read, tule, flag, rush or reed mace.

Nearly a dozen by-products have already been obtained from this "weed," and scientists expect to find several more in the next year.

This is how the center says the plant can be used:

The "root," or rhizome, can be eaten like potatoes, or ground up to make a flour for baking. Cattail cookies taste good, the scientists said. The starch content is high enough for it to be used as a substitute for cornstarch in pudding. The flour can be fermented to produce ethyl alcohol, valuable as anti-freeze, for medicinal purposes, as a cheap industrial solvent and many other purposes.

In addition, the flour makes a good substrate for growing some molds from which antibiotics are produced. Fibers can also be produced from the "root."

The stem of the cattail has traditionally been used to caulk the ends of barrels to make them watertight. For centuries the leaves have made rush furniture, baskets and mats. Three companies in northern New York fill the limited demand of barrel makers and supply all of the cattails for rush furniture in this country.

Much more important uses for the stem have now been revealed. Mr. Marsh has extracted soft fibers from the stems and leaves by treating them chemically. He believes these fibers can be used for most of the purposes that jute is used today—to stuff furniture, make string, burlap, webbing, etc.

Mr. Marsh has also extracted from the stem an adhesive substance, a polysaccharide, that may prove useful as an adhesive for paper, as sizing for paper, and

as a smoothing agent for such products as facial creams and shaving creams. The stem is also a good source of ethyl alcohol.

The cattail flower, often thought of as the spike, is also valuable. During World War II, a Chicago company processed several million pounds of the fluffy, fibrous portion of the cattail spike to stuff life jackets, baseballs and mattresses. The fluff also was compressed into sound and heat insulator board.

The minute seeds have three possible uses. A drying oil, somewhat similar to linseed oil, can be extracted from them. This oil might be refined for cooking purposes. A wax can be produced from this oil, and the seed meal that remains is a good cattle or chicken feed.

A tremendous yield of cattail "roots" can be obtained. Mr. March found that he could harvest 140 tons of rhizomes per acre near his home in Wolcott, N. Y. This is more than 10 times the yield of potatoes per acre. The dry weight, as measured by the tons of flour which could be produced, is 32 tons.

Farmers should not start harvesting their cattails, Dr. Reed warned, until there is a demand for them from industry.

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ENGINEERING

# Study "Gay White Way"

▶ THE BRIGHTEST and probably shortest "gay white way" in the nation has been lighted by scientists at the University of California.

The strip, just 400 feet long, is an experimental laboratory where the scientists hope to learn how to improve roadway lighting. Some 60 lighting units of 20 different commercial types line the sides of the four-lane experimental thoroughfare.

Prof. Dan M. Finch, an electrical engineer in the University's Institute of Transportation and Traffic Engineering, is in charge of the investigations.

Prof. Finch said the roadway, reported to be the most complete of its kind, was built because roadway lighting is becoming increasingly important and technical knowledge in the field is not well developed.

He pointed out that night driving has increased. He said that while night driving is only about one-third that of daytime, fatalities from after-dark auto accidents are three times as great. Also, many cities have street-lighting systems that are nearing the end of their serviceability, and should be replaced by up-to-date illumination.

The job to be tackled in the new laboratory will be a study of the visual effects of roadway lighting. Illumination measurements will be taken with a photometer to determine the amount of light reaching the surface of the road with different lighting systems.

A brightness meter will measure the amount of light reaching the driver's eye. A new instrument, called a "contrast meter," will measure how visible an object is in terms of the amount of contrast it presents against a background.

The roadway laboratory now includes incandescent, mercury vapor, sodium vapor and fluorescent lights. They are mounted on tall poles spaced about 50 feet apart on both sides of the road, and each pole bears five to six lamps. A cable grid structure allows changes in spacing of the lamps as needed.

In the future, different types of paving will be tested to determine the role of roadway surface in visibility. One 1,000-foot section will simulate conditions in a two-lane residential street. A second 1,500-foot strip will represent a street in a metropolitan area. The present black-top roadway represents a four-lane highway.

The research project is being sponsored and partly financed by the Illumination Engineering Society of America.

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*"INTEGRATING SPHERE" — To measure the total amount of light coming from a light source, this sphere has been built at the University of California. Final adjustments to calibrate the test lamp on the left are being made.*

California has almost 10% of all motor *vehicles* in the U. S.

Women, especially older ones, frequently drink less *milk* than the men and children in the family.

ENGINEERING

## Fires Started by H-bombs Can Be Put Out by Blast

▶ THE HEAT of A-bombs and H-bombs may start fires, but the winds they create may also snuff out such conflagrations.

This is indicated in studies in the University of California at Los Angeles engineering department.

One phase of the study was concerned with the effect of the bomb on wooded areas surrounding urban targets. Simulated A-bomb blast winds were set off with special equipment, which contained materials found in wooded areas. These included pine needles and other leaves, punk (or chunks of rotting wood), and grass.

It was found that when the bomb's heat ignited the material, the fire was completely extinguished in most cases by the blast effect. The punk, however, continued to smolder and was rekindled with fanning.

Urban materials such as cloth and newspaper were also tested. The blast extinguished the newspaper fire. However, the cloth was pleated as it might be in curtains, and portions behind the pleats continued to smolder.

The research was sponsored by the U. S. Department of Agriculture Forest Service. A. G. Guibert, P. R. Dahl, V. N. Tramontini, S. F. Mulford and E. L. Venturini performed the studies.

Science News Letter, June 5, 1954

PSYCHOLOGY

## TV Violence Symptom Of Our Social Ills

▶ THE MURDER and mayhem that children see on TV is probably a symptom, not a cause, of our social ills.

Dr. Franklin Fearing, professor of psychology at the University of California at Los Angeles, suggested here that a child's preference for violent TV programs may be an indication that he is not getting along well with his playmates.

He turns to such programs because they momentarily help him to overcome his feeling of social inadequacy. His search for excitement or thrills may involve nothing more than a harmless, even healthy, safety-valve response.

In general, TV programs and movies tend to reflect existing attitudes in our culture rather than create new ones, Dr. Fearing believes.

"Current films often depict an atmosphere of general insecurity where everybody is afraid of everybody else," he said. "Uneasiness stirred up by the spectacle of a world full of deceit and unimaginable horrors is not allayed by a happy ending. The impression conveyed is that nothing can be done about it."

Psychological surveys of film content in pre-Hitler Germany and that in the United States today revealed a striking similarity, Dr. Fearing noted.

Science News Letter, June 5, 1954

ENTOMOLOGY

## Spray at Night To Kill Wasps

➤ IF WASPS are a pest around your country home, the easiest way to get rid of them is to spray the nests with chlordane or DDT at night, concentrating the spray or dust on the nest openings. Wasps are less active and more likely to be in the nest then, U. S. Department of Agriculture scientists point out.

Hornets, yellow jackets and their nests can be removed all in one piece, the scientists advise, by plugging the nest opening with a wad of cotton soaked in carbon tetrachloride and then quickly dislodging the nest into a sack that can be burned, buried, or put into an airtight can containing a few tablespoonfuls of carbon tetrachloride.

Used on cotton wadding, carbon tetrachloride slows down the activity of these pests and lessens the chance for stings; in an airtight can, this insecticidal fumigant kills the wasps in 24 hours or less.

Science News Letter, June 5, 1954

MEDICINE

## Rat Cancer Seen Step Toward Cancer Vaccine

➤ WORK LOOKING toward a "contraceptive for cancer," or a vaccine against the disease, has been started in the laboratories of Dr. Arthur J. Vorwald at Wayne University College of Medicine, Detroit.

Dr. Vorwald described the work to a House subcommittee on appropriations considering government expenditure for cancer research for next year.

For the first time, Dr. Vorwald reported, cancer has now been induced in the lungs of white rats which is comparable to the lung cancer seen in the human male. This rat cancer took 18 months to develop, which is roughly equivalent to 50 years in the life of a man.

The cancer in the rats was induced by beryllium fumes. Beryllium has been used in industry for a number of years, and its fumes and dust have been implicated in lung and skin diseases of humans working with it or otherwise handling it.

The beryllium-induced cancers, Dr. Vorwald said, give a tool for exploring the possibilities of finding a vaccine or "contraceptive" against human cancer.

The increase in lung cancers in the last 50 years, he pointed out, must mean that humans have been inhaling something into their lungs that is causing cancers.

Finding what this is, whether industrial fumes, automobile exhaust gas or cigarette smoke, is only one part of the problem. The second important part is to find why the cells of human lungs, and other body cells, develop cancer in response to outside influences.

Evidence now at hand, Dr. Vorwald said, points to a change in cell chemistry whereby some protein in the cell may get a different chemical make-up that conditions it to become cancerous when exposed to an outside influence. Or it may be that the protein make-up change in the cell itself causes the cancer.

If scientists can find what the change is, they may be able to desensitize the individual to the altered protein, so that he would not get cancer from it.

This might be one way of vaccinating against cancer or stopping the birth of cancer.

Science News Letter, June 5, 1954

PSYCHOLOGY

## Spot Automobile Makes But Can't Read Words

➤ SOME CHILDREN can not read simple words and sentences, yet they can identify in a glance most makes of automobiles on the highway.

Such baffling differences in visual perception are under study by Dr. James Coleman and Jack Fox, psychologists at the University of California at Los Angeles.

Tests were administered to a group of boys between the ages of seven and 12 of above-average intelligence who had experienced serious reading difficulties in school. The scientists found the majority of these boys lacked the ability to discriminate between words and other symbols.

Most were unable to distinguish between simple words such as "dog" and longer ones such as "Mississippi." Some of the group, however, could identify most makes of automobiles on sight. This is in contrast to some good readers interviewed in connection with the study who could not distinguish between a Chevrolet and a Cadillac.

The psychologists do not know just what factors are involved in the retardation of visual discrimination. One speculation is that the visual sense of poor readers is not as highly developed as other senses. Another is that it is merely the result of such factors as lack of interest, too much pressure from ambitious parents and emotional difficulties in home or school life.

Science News Letter, June 5, 1954

TECHNOLOGY

## Electronic Record Keeper Available

➤ A COMPLETELY electronic record-keeping system was seen as one step closer with the demonstration in New York of International Business Machines' type "702" data processing machine.

Designed specifically for business use, the "702" was shown to IBM salesmen by closed circuit television from Poughkeepsie, N. Y., where it was built. Although the machine will not be available until next year, many rental orders have already been placed for it. They are mostly from business organizations that plan to use the computer for accounting and statistical work.

Science News Letter, June 5, 1954

# IN SCIEN

ARCHAEOLOGY

## Ancient Indian Home Found in Illinois

➤ A ROCK shelter that was occupied by prehistoric Indians nearly 11,000 years ago has been found about 40 miles south of St. Louis, Mo., according to Dr. Thorne Deuel, director of the Illinois State Museum, Springfield. It is believed to be the oldest dated Indian home east of the Mississippi.

The ancient home or camp site was unearthed when highway maintenance crews scooped earth from the base of a bluff on Barbeau Creek near Modoc in Randolph county, Ill., for use for fill on roads.

The age was determined by carbon 14 tests on charcoal samples taken at a depth of 26 feet in the deposit at the foot of the cliff.

Dr. Willard Libby of the Institute for Nuclear Studies, University of Chicago, determined the date of the lowest level to be 8697 B.C., plus or minus 650 years. Other dates determined were 6592 B.C. for samples found at 22 feet and 4001 B.C. at the 16-foot level.

Dr. Frederick R. Matson of Pennsylvania State University, representing the Wenner-Gren Foundation of New York City, collected the samples. The excavation, sponsored by the Illinois State Museum, the Illinois State Museum Society, the University of Chicago and the Wenner-Gren Foundation, was carried on in 1952 and 1953.

Science News Letter, June 5, 1954

PUBLIC HEALTH

## To Stop Smoking, Use Breathing Exercises

➤ IF YOU want to give up smoking, or if your doctor has ordered you to stop, you will find it easier if you learn to breathe properly.

Breathing exercises practiced for five minutes eight to 10 times a day for a month helped 15 heavy smokers stop smoking without "undue difficulty," Dr. William Kaufman of Bridgeport, Conn., reports in the *Journal of the American Medical Association* (May 22).

The 15 had each been smoking over 50 cigarettes a day. The exercises consist in taking deep breaths in and out 16 times a minute.

Heavy smokers take short breaths when not smoking, Dr. Kaufman finds, and this causes an uncomfortable sense of breathlessness and pressure on the chest which may make the person uneasy, restless, tired and anxious.

Science News Letter, June 5, 1954

# CE FIELDS

MEDICINE

## TB Patients Fare Better When Given Cod Liver Oil

➤ PATIENTS WITH moderately advanced tuberculosis should get crude cod liver oil concentrate in addition to their regular diet, it appears from research by Dr. Horace R. Getz of the Charles Cook Hastings Home, Altadena, Calif.

This is the only way, he found, that enough vitamin A can be put into their bodies in a form that can be utilized. All the patients in his study were night blind and showed other eye conditions resulting from vitamin A lack.

The patients also were short on vitamin C, but this deficiency could easily be made up by adequate doses of the vitamin. The vitamin A deficiency, however, seemed due to the body's inability to get all the good out of the vitamin unless it was given in the crude cod liver oil concentrate form. Dr. Getz reported his study to the National Tuberculosis Association.

Science News Letter, June 5, 1954

GEOLOGY

## Faster Spotting of Uranium Ores Seen

➤ FASTER AND cheaper discovery of uranium deposits in the Colorado Plateau is seen from a new instrument whose details have now been revealed for the first time.

The instrument uses sound waves to map the top layers of the earth's surface. It is a modification of the reflection seismograph, a device used by oil companies to hunt for new oil deposits far below the surface.

Two U. S. Geological Survey scientists, L. C. Pakiser of Washington and D. R. Mabey of Salt Lake City, Utah, suggested the modifications for the instrument, which was designed by the Midwestern Geophysical Laboratory.

Their report in *Science* (May 21) states that they expect the "shallow-reflection seismograph" to have "wide application" in ground-water and engineering investigations, in near-surface oil explorations and in "mining investigations."

From the description of the instrument's operation, the fact that it could be used to locate sedimentary deposits is clear. Uranium ores on the Colorado Plateau are found in sedimentary rocks, which are formations resulting from the deposit of sediment. The two scientists, however, do not mention uranium in their report.

Only two ounces of dynamite placed in a hole drilled in the ground are needed to set off the sound waves. The reflected sound waves are caught in as little as 30-millionths of a second by 12 recording amplifiers spaced 10 to 15 feet apart.

The undersurface geology of the area studied with the new instrument is found from the tiny differences in time required for reflected waves to reach the 12 recorders. The most important modification is a "variable presuppression control" that prevents the very first waves, which only confuse the picture, from being recorded.

The instruments can be converted to standard reflection seismograph work by a simple exchange of amplifiers.

Science News Letter, June 5, 1954

TECHNOLOGY

## Railroads to Get "New Look" Car

➤ A "NEW look" is coming to the railroads in the form of a "Siesta" car that offers individual rooms to passengers at a coach rate plus a small charge to cover bed linen and towels.

Created by engineers of the Budd Company, Philadelphia, to attract more persons to rail transportation, the new car is functional in design and has no "fancy stuff."

The 85-foot-long car contains 36 single rooms and two double rooms. The single rooms are duplexed, every other room being two steps above the aisle floor.

Each room contains a seat for daytime travel, a six-foot bed with foam-rubber mattress, a toilet, wash-stand, full length mirror and luggage space. Individual air-conditioning and heat controls regulate the indoor climate to suit the occupant.

Although based on the roomette car idea, the Siesta car is said to be cheaper for the railroads on a per-passenger basis, as well as being less expensive for the passengers.

Science News Letter, May 15, 1954

MEDICINE

## Rheumatics Get Better On Old Style Treatment

➤ SUCH OLD fashioned treatment as rest in bed, suitable exercises and aspirin "substantially improved" 200 of 282 rheumatoid arthritis patients, and brought 113 of them to "self sufficiency and an active social and economic life," the Arthritis and Rheumatism Foundation has announced.

The report covers a two and one-half year follow-up study of the value of long-term conservative treatment for the disease. Of the 282 patients, 183 were either partially crippled and dependent to some degree upon others or completely crippled and confined to a bed or wheel chair.

Commenting on the modern drugs, the Foundation's report stated that while the results are more dramatic and immediate, they disappear when medication is discontinued. Besides, the various drugs in use today have not shown conclusively that they can alter the natural course of the disease or prevent crippling.

Science News Letter, June 5, 1954

ENGINEERING

## Device Makes Fresh Water From Sea Water

➤ A DEVICE to make fresh water out of sea water is an osmotic membrane. Using the principle by which body organs and individual cells purify fluids, it has been built by Gerald Hassler, University of California at Los Angeles engineer.

Osmotic membranes have been proposed before in connection with sea water distillation. However, previous membranes have been like sieves with tiny holes that allow small molecules to pass through while rejecting larger ones.

Mr. Hassler's membrane is an extremely thin oil layer supported by capillary action. It has no holes as such, but water molecules can diffuse through it while other molecules are blocked.

Mr. Hassler believes he can ultimately produce a cubic yard package of oil membranes capable of producing 2,000 gallons of fresh water per day. The unit would cost about $1,000 and last perhaps for 20 years.

Preliminary experiments have been supported by funds from the State of California. Present research is being supported by a $10,000 grant from the Department of Interior's Saline Water Project.

Science News Letter, June 5, 1954

GEOLOGY

## Canadian Meteor Crater Sought by Explorers

➤ A SUSPECTED meteoric crater 35 to 40 miles in diameter, situated in northern Quebec, is shortly to be examined by a ground party of scientists from the Dominion Observatory and the Canadian Department of Mines and Technical Surveys, Ottawa.

Headed by Dr. E. R. Rose, the party leaves Ottawa in June. Announcement of the summer survey program gave the first hint of the crater's existence.

High-level aerial photography has already revealed a generally circular, 1,200-square-mile area between two long, crescent-shaped lakes named Manicouagan and Mouchalagan. They lie in a rugged wilderness about 120 miles northwest of Seven Islands on the north shore of the Gulf of St. Lawrence.

The two-mile-across Chubb Crater, at present the world's largest meteoric crater, is about 800 miles north of Seven Islands.

The survey party will have to fly to the area. They will seek to establish the belief held by top Canadian government geologists that the formation is an ancient crater, possibly filled in by glacial action. An attempt will also be made to ascertain if sedimentary rocks in the area were deposited by a glacier. Mainly, the district is composed of pre-Cambrian granite.

It is thought that a "good possibility" exists that a major geological discovery is in the offing.

Science News Letter, June 5, 1954

ANTHROPOLOGY

# Negro Ancestor for Man?

**Anthropologists cannot say for sure but climate has favored evolutionary darkening of skin and reduction of body size in tropics, with large frames farther north and south.**

**See Front Cover**

By MARJORIE VAN DE WATER

➤ WAS MAN'S remotest ancestor a Negro? Some anthropologists think he may have been. Others believe he was more likely white. Another theory is that he was somewhere in between—a sort of cafe-au-lait.

Some even hold that man had no single ancestor, but several who developed in different parts of the world.

One leading anthropologist, Dr. Carleton S. Coon of the University of Pennsylvania, suggests that the variations in men that we consider racial may have originated in earlier stages of evolution. In other words, a Negro may have been black before he was a man.

No one really knows for sure. Unfortunately, our acquaintance with the earliest men and the ape-men who preceded them is confined to fragments of fossilized bone—in one case just a single tooth.

Remarkable detective work on the part of anthropologists has clothed this bone sample with imaginary flesh. They determine from the way the skull sets on its supporting bones and the shape of the pelvic bones whether the owner walked erect like a man or crouched like an ape. They deduce from the pattern of wear of a tooth something about the diet once chewed, and whether the jaw worked in a manner typically human or apelike.

## Melanin Is Coloring Pigment

However, not even the most experienced deduction can tell us whether our ape-man ancestor had black skin, white skin or something in between. We do know that climate can, gradually over a period of many generations, change the color of man in either direction.

In a sunny tropical climate, back in the days when man had no clothing or hairy covering to protect his body, the black man or the one with relatively dark coloring had a distinct advantage for survival. The black skin of a Negro is due to the presence of a dark coloring matter, melanin, in the outer layers of the skin. Melanin serves as a filter to screen out the harmful, burning rays of the sun. Black skin is, therefore, a great advantage to the wearer in regions where the sun is nearly overhead and sends down its burning rays through cloudless skies.

Burning is not the only damage that the bright, unclouded sun can do to white skin, however. Some authorities believe that white skin is more susceptible to the injury that causes cancer than is black skin.

Man is not the only member of the animal kingdom protected by color in the sunny tropics. Hairy animals of the grassland and desert are generally light or tawny, but those that run naked like man in the primitive state are black or dark gray. They include the elephant, rhinoceros, hippopotamus, buffalo and some pigs.

The effect of climate on color is illustrated in the photographs on the cover of this week's SCIENCE NEWS LETTER. On the left is a polar bear whose white coat blends in with the Arctic snow and ice. The brown Kodiak bear on the right lives in a region to the south.

## Other Forms of Protection

And skin color is not the only protection the Negro has against the tropical hot sun. He has tightly curled, woolly hair. Some anthropologists see no particular advantage in this, but believe that the heredity genes that equip an individual with woolly hair may be linked with others that give him some other advantage for life in the tropics.

Dr. Coon and some other anthropologists look upon the woolly hair itself as advantageous. The tight curls, they point out, serve to trap air, and this "dead air" acts as heat insulation for the head, serving the same purpose as the European's pith helmet.

Black skin, such an advantage for survival under the blazing sun of the tropics, becomes a decided disadvantage in the cloudy, foggy north.

There, where the sun never gets high in the heavens during the long winter months, the atmosphere with its moisture droplets provides filter enough for the human skin. The cold probably induced even the primitive early peoples to put on clothing, thus screening out more of the sun.

Here the great problem is not sunburn, but rickets. Few people die of rickets, but the disease is debilitating and can cause those suffering most to fall behind in the keen competition for food. In addition, rickets can bring deformity of the pelvis in women, causing them difficulty in childbearing and perhaps death of mother, baby or both.

Men with a light skin or with a skin capable of tanning in summer and fading in winter have a much better chance of survival in the shady, foggy, cloudy northlands, than have those with black skin.

Skin color is not the only change that climate has produced in man. Body size is also affected, but this time not so much by sunlight as by heat. A recent tabulation of body size of the aboriginal inhabitants of North and South America by Dr. Marshall T. Newman, Smithsonian Institution anthropologist, shows that man tends to increase in size as he lives farther from the tropics, either to the north or to the south.

The reason small body size is an advantage for survival in the tropics' heat is because man loses heat through his skin. The small man has more skin area in proportion to body volume. Heat loss is greatest from a cylindrically shaped object. For this reason, long, slender arms, legs, necks and fingers are an advantage in hot climates provided the air is not too humid.

Where the moisture in the air is high, heat loss through the skin is cut down, but the "tropical build" is still no disadvantage.

The large, bony hands of the North European, a great advantage for heat loss in hot summers, are still no disadvantage in the cold winter weather. This is pointed out by Dr. Coon in "Climatic Change." (See SNL, Feb. 20, p. 125.)

When the outside temperature drops below 83 degrees Fahrenheit, the body stops sweating and vasoconstriction shuts off the "hot weather route" of blood returning to the heart from the hands. The chilled venous blood now travels through deep-lying veins that surround the artery. The venous blood is thus warmed by the arterial blood before it gets to the heart.

## Arctic Peoples "Tailored"

This means, Dr. Coon explains, that in a land of hot summers and cold winters, a man can afford to have big bony hands; in cold weather "they are simply shut off from the heat system like an empty room."

Dr. Coon also tells about people living in the coldest parts of the world who have bodies "tailored" for cold weather.

The people who live around the Arctic Sea are short, but they are not slender like their tropical cousins; they are thick set, relatively globular. They have thick insulating layers of fat. Extremities such as noses, fingers and toes are reduced to a minimum.

The Mongoloid people, who live in the Arctic cold, have been modified by evolution until they are perfectly designed to withstand cold. They have a flat, fat face with eyes reduced to a thin slit. The narrowness of the eye opening protects them at the same time from the freezing cold and from the glare of sun on ice and snow. A short nose presents a minimum of surface to the cold, yet the air passages to the lungs are just as long and entirely inside. The hair of the beard is sparse and coarse which makes it less likely for moisture to freeze on it.

NUTRITION

# World's Food Outlook

➤ THE FREQUENTLY presented picture, of two-thirds of mankind facing a lifetime of malnutrition and actual hunger is painted in too somber colors. This is the opinion of Dr. M. K. Bennett, director of Stanford University's Food Research Institute, Calif.

In "The World's Food" (see SNL, May 29, p. 348), Dr. Bennett takes a much less gloomy view of the dangers of rapidly increasing numbers of hungry mouths with a definitely limited supply of food. This view is emphasized by the United Nations' Food and Agricultural Organization.

The word "hungry" may not mean the same to the statistician as it does to you, Dr. Bennett points out. Hunger used to mean those pangs that can be relieved when you eat food—any kind of food. But now it means lack of a sufficient amount of any of the 40 or more food constituents needed to maintain health.

To say that two-thirds of the world's population is hungry is a very different thing, he objects, from saying that two-thirds of the world's population is in some way malnourished from not getting enough of each of the nutrients to assure the maintenance of maximum health or to "measure up to standards alleged to be scientifically determined of desirable intake of each element."

A man may experience "pink tooth brush" from lack of enough ascorbic acid, or have eyes over-sensitive to light because he is not getting enough vitamin A, and still be quite unconscious of living an abnormal existence.

FAO, in mapping the world geography of hunger, Dr. Bennett explains, against estimates of per capita caloric consumption of nations, sets other estimates of, or numerical assumptions about, per capita caloric requirements.

"Nobody," he comments, "familiar with the difficulties of crop estimation and the varying levels of its technique in different countries, or with the difficulties of ascertaining what quantities of humanly edible foods are fed to animals, used industrially and wasted, or with the difficulties of ascertaining population numbers and caloric content of foods, can feel altogether comfortable about the accuracy of all the FAO's estimates of per capita caloric consumption."

Dr. Bennett believes, however, that the FAO estimates are not far from the facts.

"The problem," he says, "is less one of accuracy than one of interpretation."

It is necessary, he indicates, to realize the difference between various kinds of hunger. Hunger may mean famine when large proportions of the population die of starvation. It may mean what Dr. Bennett calls "siege hunger" or "preharvest hunger." Siege hunger is caused by war when the enemy cuts a group of people off from their food supply. Preharvest hunger is very common over many parts of the world.

For a people to be able to grow more than they need in one year and hold enough in stock to tide them over a possible year of crop failure, which may never come, involves a degree of forethought that one expects only of advanced and literate people.

It would be an important goal, he suggests, to eliminate such sporadic preharvest hunger.

Science News Letter, June 5, 1954

TECHNOLOGY

# Scientific "Sniffer"

➤ A SCIENTIFIC "sniffer" that may be able to determine precisely the quality of food by its odor is being developed by scientists at the University of California.

Fine grading of such foods as fish, vegetables, fruit, cheese, butter, coffee, spices, pepper, etc., may one day be done by this laboratory "nose." Farmers might even use it to tell the best time to pick fruit for eating or for canning.

The instrument is an outgrowth of research by Dr. Lionel Farber for the better detection of fish spoilage. Dr. Farber started out to find something to detect incipient fish spoilage before it became apparent to that oldest and most reliable odor testing instrument—the human nose.

The nose cannot pick up some of the volatile substances in the early stage of spoilage. Moreover, personal opinion, odor sensitivity and other factors prevent the nose from being precise.

Dr. Farber came up with a simple device called the stinkometer. He passes clear air through a food sample and then into a vessel containing permanganate, which has a magenta color.

If the food is spoiled, the magenta color changes. Depending on the quantity of odor, the magenta goes to blue, gray blue, green blue, green and, in the worst cases, pale green. The final color shows the degree of spoilage.

The test is simple, quick and inexpensive for fish spoilage.

Dr. Farber noted that the stinkometer cannot tell whether the odor is good or bad. It just shows how much there is. So he began using it to test for quality. The quality of coffee, for example, can be measured by the amount of aroma it has left. The device he developed is able to measure this amount.

Science News Letter, June 5, 1954

## • RADIO

**Saturday, June 12, 1954, 3:15-3:30 p.m. EDT**

**"Adventures in Science" with Watson Davis, director of Science Service, over the CBS Radio Network. Check your local CBS station.**

**William P. Bittenbender, president of the International Selling Corporation, will discuss "The Centenary of Industrial Aluminum."**

AGRICULTURE

## Woodchips and Sewage Improve Soil and Crops

➤ WOODCHIPS, SAWDUST and sewage sludge will improve soil structure and crop yields if used carefully, Dr. Herbert A. Lunt, soil scientist at the Connecticut Agricultural Experiment Station, New Haven, Conn., has found.

Dr. Lunt warned that all health regulations must be followed in using sludge, the product of modern sewage treatment plants. Raw, unheated sludge should not be used under any circumstances.

Sludge supplies nitrogen and other important elements for plant growth. Dr. Lunt's research indicates, however, that it must be used in varying amounts depending upon the acidity of the soil and requirements of the plants. Some plants may be injured by too much sludge.

Woodchips and sawdust supply few nutrients for plants, but they improve the soil structure. Dr. Lunt found that chips increase the water and nutrient-holding capacity of the soil. Chips may not increase crop yields immediately. Sludge also is effective in improving soil structure.

A combination of sludge and chips is effective and less likely to injure plants sensitive to too much nitrogen.

Science News Letter, June 5, 1954

# • Books of the Week •

**For the editorial information of our readers, books received for review since last week's issue are listed. For convenient purchase of any U. S. book in print, send a remittance to cover retail price (postage will be paid) to Book Department, Science Service, 1719 N Street, N.W., Washington 6, D. C. Request free publications direct from publisher, not from Science Service.**

AFTER THE DOCTOR LEAVES: A Practical Guide to Approved Post-Medical Care and Treatment of Chronic Diseases for the Patient and His Family—Marguerite Clark, foreword by Howard A. Rusk—*Crown*, 310 p., $3.75. During the second World War, much was discovered about the importance of patient after-care, called "rehabilitation." A science writer tells here what the patient and his family can do to advance recovery.

AMERICAN BIRD SONGS: Volume Two 33 1/3 RPM—P. P. Kellogg and A. A. Allen—*Cornell University Records*, two sides of 12-inch record, $7.75. Duplicating in every respect an earlier 78 rpm release with the same title. Recordings of 51 bird voices caught in their native habitat.

THE ATOMIC SUBMARINE—John Lewellen—*Crowell*, 134 p., illus., $2.50. A science writer is the author of this explanation of the operation of the Nautilus, atomic submarine that can cruise almost indefinitely under water.

BASIC BOTANY: An Introduction to the Science of Botany—Fred W. Emerson—*Blakiston*, 2d ed., 425 p., illus., $5.00. The whole plant is treated as a functional unit; leaves, stems and roots are discussed in full detail, but only as integral parts of the plant.

CAMS: Design and Layout—Louis Kasper—*Chemical Publishing Co.*, 101 p., illus., $3.50. A practical book intended for engineers, designers, and draftsmen.

CLASSIFICATION OF WHEAT VARIETIES GROWN IN THE UNITED STATES IN 1949—B. B. Bayles and J. Allen Clark — *Govt. Printing Office*, USDA Technical Bulletin No. 1083, 173 p., illus., paper, 70 cents. More than 200 varieties are grown in the United States. This classification system, intended as a practical system, uses only such characters as can be distinguished by the naked eye.

ELEMENTS OF MATHEMATICS FOR RADIO, TELEVISION AND ELECTRONICS — Bernhard Fischer and Herbert Jacobs—*Macmillan*, 569 p., illus., $7.20. The practical application in engineering of simple mathematics.

EXPERIMENTS WITH ATOMICS — Nelson F. Beeler and Franklyn M. Branley — *Crowell*, 160 p., illus., $2.50. You will not be able to make a toy atomic bomb at your kitchen sink with the help of this book, but you can produce illuminating models showing the structure of the atom and instruments used in its study.



FREEDOM AGAINST ITSELF—Clarence K. Streit —*Harper*, 316 p., illus., $3.75. The tension that is preparing new disaster for us, the author declares, lies within us—it is our faulty grasp of freedom that is halting man's political and moral progress.

GEOGRAPHY OF NORTH AMERICA—George J. Miller, Almon E. Parkins and Bert Hudgins—*Wiley*, 3d ed., 664 p., illus., $7.50. Discussing the white man's use of land and its natural resources. A text for the beginning student.

GOOD AND BAD SCHOOL PLANTS IN THE UNITED STATES AS REVEALED BY A NATIONWIDE SCHOOL FACILITIES SURVEY — James L. Taylor and James Woofter and others—*Govt. Printing Office*, Office of Education Special Publication No. 2, 77 p., illus., paper, 50 cents. A book of photographs showing contrasts in school buildings and equipment. Striking is the picture of a delapidated one-room school, typical of 52% of our elementary schools.

HOW TO HELP OLDER PEOPLE: A Guide For You and Your Family—Julietta K. Arthur—*Lippincott*, 500 p., $4.95. Each day 1,000 more join the ranks of the "older group." This is intended as a practical guide to the handling of very real everyday problems in the families concerned.

AN INTRODUCTION TO CLIMATE — Glenn T. Trewartha—*McGraw-Hill*, 3d ed., 402 p., illus., $7.00. Climate, the author points out, is probably the single most important element causing variations in use potentialities of different parts of the world. A textbook for college students.

THE KACHINA AND THE WHITE MAN: A Study of the Influences of White Culture on the Hopi Kachina Cult—Frederick J. Dockstader—*Cranbrook Institute of Science*, Bulletin 35, 185 p., illus., $5.00. Every year in the time between Christmas and Fourth of July, the Hopi Indians of Northwestern Arizona put on between 500 and 1,000 religious festivals. These are not secret and white visitors are welcome.

THE MEANING OF SOCIAL MEDICINE — Iago Galdston — Published for the *Commonwealth Fund* by *Harvard University Press*, 137 p., $2.75. Social medicine, the author believes, is not a utopian dream. It offers not only a logical but a most desirable resolution of the multiple problems that now beset society and medicine.

THE MICROTOMIST'S FORMULARY AND GUIDE —Peter Gray—*Blakiston*, 794 p., illus., $10.50. Part I is a treatise on the art of making microscope slides from biological specimens. Part II is a classified list of the formulas and techniques used in that art.

NERVE IMPULSE: Transactions of the Fourth Conference March 4, 5, and 6, 1953, Princeton, N. J.—David Nachmansohn, Ed.—*Josiah Macy, Jr., Foundation*, 224 p., illus., $4.00. An exchange of ideas among experts from various disciplines.

OPERATIONS RESEARCH, CHALLENGE TO MODERN MANAGEMENT—Gerhard R. Andlinger and others—*Harvard University Graduate School of Business Administration*, 120 p., paper $10.00. Describing this relatively new technique for introducing objectivity and reducing guesswork in the executive's decision-making.

THE OUTLOOK FOR WOMEN AS MEDICAL X-RAY TECHNICIANS — Women's Bureau — *Govt. Printing Office*, Medical Services Series, Bulletin No. 203-8 (1954) 53 p., illus., paper, 25 cents. Information for those planning a career.

PSYCHOLOGICAL TESTING — Anne Anastasi — *Macmillan*, 682 p., illus., $6.75. A textbook, evolved in the classroom, intended to acquaint the student with the major types of tests in current use. No previous knowledge of statistics is presupposed, but those with statistical training will find here an opportunity to review what they have learned.

PSYCHOLOGY OF PERSONNEL IN BUSINESS AND INDUSTRY — Roger M. Bellows — *Prentice-Hall*, 2d ed., 467 p., illus., $7.35. The aim of this book is to provide a link between personnel psychology research and its application in industry. It tells the business manager how he can use science to make the most of the human resources at his disposal.

PUBLIC EDUCATION AND A PRODUCTIVE SOCIETY: Horace Mann Lecture 1953—Maurice J. Thomas—*University of Pittsburgh Press*, 95 p., $1.00.

RAPID DETECTION OF CATIONS—Gaston Charlot, Denise Bezier and Rolland Gauguin translated by Ralph E. Oesper—*Chemical Publishing Co.*, 92 p., illus., $3.00. Describing a method which can be applied to a single drop of solution.

THE SCIENCE OF CHEMISTRY — George W. Watt and Lewis F. Hatch—*McGraw-Hill*, 2d ed., 546 p., illus., $5.50. The chapter on artificial radioactivity and atomic energy has been brought up-to-date, and other parts of this textbook for general course students have been completely revised. A section on nuclear fusion has been added.

A SEAL'S WORLD: An Account of the First Three Years in the Life of a Harp Seal—Frank Stuart—*McGraw-Hill*, 224 p., illus., $4.00. An adventure story, not a zoological work, by an English novelist and playright who has here attempted to give a true picture of a harp seal's life.

SMALL-SCALE INORGANIC QUALITATIVE ANALYSIS—J. T. Stock and P. Heath—*Chemical Publishing Co.*, 96 p., illus., $2.50. The first American edition of a book originating in England. Practical aspects are emphasized throughout.

THEORY OF FUNCTIONS OF A COMPLEX VARIABLE: Vol. One—C. Caratheodory translated by F. Steinhardt—*Chelsea Publishing Co.*, 301 p., $4.95. Although this book is primarily a textbook, it is believed the expert will also find in it much of interest.

WHEN PARENTS GROW OLD—Elizabeth Ogg — *Public Affairs Committee*, Public Affairs Pamphlet No. 208, 28 p., illus., paper, 25 cents. Calling attention to some of the problems and needs of the elderly that are too often overlooked, and giving advice on their handling.

WINTER-HARDY AZALEAS AND RHODODENDRONS: A Brief Account of These Plants and Their Culture in Zero Climates of the American East — Clement Gray Bowers — *Massachusetts Horticultural Society*, 112 p., illus., $3.00. For amateur gardeners.

WOOL SHRINKAGE AND ITS PREVENTION — R. W. Moncrieff — *Chemical Publishing Co.*, 576 p., illus., $10.50. Wool does not shrink when it is still on the sheep, nor do the moths harm it. This book is a technical discussion of shrinkage cause and prevention for manufacturers and for workers in the textile industry.



Chicken *eggs* when laid have a temperature of about 105 degrees Fahrenheit.

GENERAL SCIENCE

# Draft Taking Scientists

► IN FACE of a serious decline in the number of graduate students in science, the draft is now putting into the army specialists immediately upon their receiving undergraduate degrees.

This situation, highly dangerous to the future supply of scientists and engineers, has been revealed by Dr. Howard A. Meyerhoff, executive secretary of the Scientific Manpower Commission, Washington.

The draft will come to mean that every able-bodied male of military age who is not in service or in the ministry will be selected for service, Dr. Meyerhoff warns. Since May 1, 1953, local draft boards have been taking graduation from college as their cue to reclassify recipients of the bachelor's degree.

Graduates lose their deferment, even though they go on to graduate work with scholarships and fellowships in many cases actually awarded by the Government itself.

First-year graduate enrollment dropped to 8,000 in the academic year 1952-53, whereas it was 11,721 in 1951-52.

The mortality during the summer months was especially appalling, and many departments found themselves without graduate assistants when classes started in September.

National Science Foundation fellows and Office of Naval Research and Atomic Energy Commission research assistants were prominent among the casualties, as revealed by a sample survey of 34 departments in 19 institutions. This spot check, which was made in October, indicated that more than 2,000 advanced graduate students had been inducted without regard to the status of their work.

The disregard of the best and most disinterested educational judgment and advice can be substantiated by innumerable specific cases, Dr. Meyerhoff declares.

Selective Service has virtually taken over our system of graduate instruction in science, he charges. It has drastically cut the number of students, and is thus disrupting the supply and the flow of carefully selected manpower into fields where there are already disurbing shortages.

It is seriously impairing the effectiveness and the pattern of instruction at the undergraduate, as well as the graduate, level. It is pursuing a course that runs counter to the advice of the scientists from whom it sought advice, and counter to the national welfare as the Department of Labor sees it. It is depriving the Armed Forces of people with highly specialized training, insofar as there is a need for such men in uniform.

It is, however, a real benefactor to foreign students who, of dire necessity, are being hired, according to Dr. Roger Adams of the University of Illinois, to fill 50% to 75% and more of the vacant assistantships in our graduate schools.

Dr. Meyerhoff's statement is appearing in *The American Psychologist* (June).

Science News Letter, June 5, 1954

TECHNOLOGY

# Cheap A-Electricity

► A DECADE from now, or earlier, electricity will be produced commercially from uranium at a cost less than coal-fueled power.

This prediction by Francis K. McCune, General Electric's general manager of atomic products, made at the Atomic Industrial Forum in Washington, has put a new time and cost dimension upon the harnessing of the atom to industry. Heretofore, electricity from the atom has cost more than electricity from coal in computed estimates.

While industry is ready to move in, Congress has not yet set the "ground rules" to regulate such atomic power development by industry.

Rep. W. Sterling Cole (R., N. Y.), chairman of the Joint Congressional Committee on Atomic Energy, believes that the Atomic Energy Commission should in the future confine its activities to military applications of atomic energy.

Patent laws which have been in effect in the United States for 150 years are adequate to insure satisfactory industrial operation of atomic energy power plants, in his opinion.

No cutting of an atomic "melon," but rather planting the seed, is the present status of industrial participation, Rep. Cole said. Returns to industry from its investment are still half a billion dollars away in terms of experimental installations, according to his calculations.

The operating costs of a coal burning power plant are figured by General Electric at two-tenths of a mill per kilowatt hour higher than for a plant using nuclear fuel. This figure includes the fixed charges resulting from original cost of erecting the plant. The saving comes in the enormously greater energy that can be wrested from atomic fuel.

Costs for an atomic energy electric plant using the new boiling reactor are figured by General Electric at 4.65 mills per kilowatt hour for fixed charges, 0.7 mill for operating cost and 1.35 mills for fuel, giving the total of 6.7 mills per kilowatt hour.

In contrast to this, a coal burning plant is estimated to cost 3.0 mills for fixed charges, 0.5 mill operating cost and 3.4 mills for coal figured at 35 cents per million BTU, the measure of fuel efficiency. This price for coal is said to be that now paid in a number of places in this country.

The atomic fuel will be enriched uranium, and the breeder reaction will be used to supply part of the fissionable material. A burn-up of one percent of the fuel is expected, and the exposure of the fuel in the reactor is figured at 10,000 megawatt days per ton. This is a new unit in fuel calculations.

Industry thus gives evidence of considering as soon the time when electricity from atomic reactors will compete with that from other sources.

Meantime, Congress will postpone setting up the ground rules for such competition, if Rep. Cole has his way. Passing the buck to the 85th or 86th Congress was his recommendation to the group.

Science News Letter, June 5, 1954

TECHNOLOGY

## Rubber Vulcanized by Atomic Radiation Alone

► RUBBER VULCANIZED without sulfur or other chemical agent has been produced by atomic energy in Britain's nuclear reactor pile at Harwell.

Oxidation is not a factor in this atomic energy vulcanization process. Contrary to widely accepted theory, the hardening change in rubber structure can take place when no oxygen can get to the material.

Energy alone is responsible for the change in structure of the rubber, since the same result is obtained no matter what type of radiation from the atomic reactor is used.

Similar changes in the structure of paraffin waxes irradiated in the pile result in a material with a very high melting point.

Theoretical explanations of these changes in structure as the result of atomic irradiation may lead to new applications of atomic energy in the production of new plastics and other useful materials. The studies in progress are reported by Dr. Arthur Charlesby of the Atomic Energy Research Establishment in *Proceedings of the Royal Society* (A. Vol. 222, 1954) and in *Atomics* (Jan.).

Science News Letter, June 5, 1954

ANTHROPOLOGY

## Breast Bone Tells Age In Humans as in Chickens

➤ GOOD COOKS have for a long time selected chicken for Sunday dinner by pressing on the breast bone. If the end of the bone was soft, the bird would be young and tender.

Now an anthropologist has found that the condition of the breast bone in a human skeleton can give him information about how old the owner was when he was living.

The breast bone, or sternum as it is called by scientists, goes through certain graded changes in early adult life. These changes are most distinctive in the teens and twenties. This fact indicates the possibility of using the condition of the breast bone to aid in identifying soldiers who die on the field of battle, Dr. T. Dale Stewart, physical anthropologist of the Smithsonian Institution, has found.

The changes he has observed are a progressive closing of the joining onto the ribs, and also a gradual alteration of the surface of these joinings. The surface becomes increasingly puckered and dimpled, and is eventually glazed over by mature bone. The change is from a plush-like appearance to something looking more like taffeta.

Science News Letter, June 5, 1954

MEDICINE

## Long Hospital Stay For TB Patients Out

➤ THE LONG period of rest in bed and of staying in the hospital or sanatorium, which formerly ran to 18 months or two years at least, seem on their way out for tuberculosis patients.

Reports from three centers on results with shorter periods were given at the meeting of the National Tuberculosis Association in Atlantic City.

Treatment without bed rest of 90 patients with minimal, moderately advanced and far-advanced tuberculosis succeeded at the National Jewish Hospital, Denver, Dr. Sidney H. Dressler, reported. The patients were permitted to be up after an initial period of from three to six weeks in bed. After six months on isoniazid and streptomycin, there were no clear-cut spreads of disease to new areas of the lung, even among 16 patients whose sputum continued to produce tubercle bacilli.

In Chicago, out-patient treatment has proved successful for patients whose treatment was started in the hospital, but not for those who had never been hospitalized, according to Dr. Meyer R. Lichtenstein of the Chicago Municipal Sanitarium.

In New York, over half of a group of patients treated outside the hospital with isoniazid and PAS had negative sputums at the end of six months and 39% showed X-rays of improvement, Dr. Arthur B. Robins of the city's health department reported.

Science News Letter, June 5, 1954

ZOOLOGY

## NATURE RAMBLINGS

**Pocket Gophers**

➤ ANY ONE who has ever dug a small hole in the ground should stand in awe of the earth-moving prowess of the pocket gopher.

This little rodent, standing about half a hand high, weighing at the outside about a pound, and rarely exceeding a foot in length even with his long tail included, is a digging fool.

It has been estimated that in a good night's work in sandy soil a diligent gopher can dig a tunnel 300 feet long and one gopher high. This is all the more remarkable since the gopher, unlike the mole which compresses the earth by brute force as it worms its way through the ground, actually excavates the displaced earth by carrying it to the surface.

In other words, a foot-long gopher can dig a tunnel 300 times its own length overnight. A rough equivalent would be for a soldier to dig 300 slit trenches in one night, providing shelter from shrapnel for his entire company. To make the analogy valid, of course, the soldier would have to perform this feat without tools. And even so, a ditch is easier to dig than a tunnel.

A gopher digs dog-fashion, loosening the dirt with its front feet and in the same motion throwing it backward underneath its body. It has heavy muscular shoulders and short powerful forearms, plus strong sharp claws that are very well suited to the job of digging.

After the gopher has loosend one load, it turns an agile somersault to face about in the opposite direction. Then, using a swimming motion not unlike the breaststroke, it pushes the load with its chest back up the tunnel to the surface.

Gophers are vegetarians. Their life is almost wholly subterranean, spent in tunneling through the earth in search of forage. Their food is made up of roots, bulbs and tubers. For this reason they are frequently a great nuisance to farmers and gardeners who find their feeding habits very destructive.

Pocket gophers get their name, not because they would fit into a pocket, but from the remarkable external cheek pouch where they store their food. These little pockets, one on each side, are fur-lined. As the gopher cuts off bits of food, it stuffs them into the pockets. The animal works rapidly, using both paws somewhat like a small boy stuffing cookies into his pants pockets when no one is looking.

When the pockets are filled to the gopher's satisfaction, it scurries off through its elaborate tunnel to one or another of its storerooms. These are small galleries especially built for the pantry purpose. Here the gopher stores his groceries against future hunger. Then he goes back to work, digging and foraging.

Science News Letter, June 5, 1954

MEDICINE

# Babies Verge on Blue

➤ A SIGNIFICANT number of newborn babies hover on the verge of becoming "blue baby" children for the first three days of their lives, three Stanford University medical scientists have discovered.

It takes that long for the pre-birth opening between the lung artery and the aorta to close, these scientists find. When the opening fails to close, there is inadequate circulation of blood through the lungs and in consequence it does not pick up enough oxygen. The lack of oxygen in the blood results in the blue color and other difficulties of the "blue babies."

This opening, called the ductus arteriosus, remains open for the first three hours of life of most babies, the Stanford scientists report. The exact time of its closing has heretofore never been determined. Complete closure is known to take from six to eight weeks, but most authorities agree that long before the two months have passed, the opening is sufficiently closed to prevent the passage of any significant quantities of blood.

The Stanford scientists tested the point by taking samples of blood from a tiny artery in the new baby's right hand and from a tiny artery in its foot. The oxygen saturation of the blood in each sample was then compared.

During the first three hours after birth, it was much less in the foot than in the hand, showing that blood carried to the lower part of the body was not all going through the lungs first. After three days of life, however, this difference had disappeared in most of the 12 normal babies studied.

The scientists, Drs. Frederic L. Eldridge, Herbert N. Hultgren and Mary E. Wigmore of Stanford University School of Medicine, report their findings in *Science* (May 21).

Science News Letter, June 5, 1954

PUBLIC SAFETY

# Bomb Proof Building

**First structure in Washington built to withstand atom bomb blasts will open in September. Its narrowest parts face the probable blast area.**

➤ THE FIRST "atomic bomb proofed" building in the nation's capital will open for business on or about Sept 15. The building is the new Armed Forces pathological building at Walter Reed Army Medical Center.

Strictly speaking, the building should be called "blast resistant," not "atomic bomb proofed." The main portion of it is enclosed by steel reinforced concrete walls made to "roll with the punch" of the blast wave, giving rather than breaking as the wave strikes.

The building is located on its site so that the narrowest parts, with least wall area, face the center of Washington, which presumably would be the area from which the blast would come in case of an atomic attack on the nation's capital.

For further protection, there are no windows in the main part of the five stories that are above ground. The building extends three stories underground. The only windows are in the two small four-story wings at the north and south ends of the building. These wings will house administrative offices and are considered expendable.

A closed circuit color television hook-up and a pneumatic tube carrier system, like the change and cash carriers in department stores, will run between the new pathology building and the operating rooms in Walter Reed Army Hospital. This will speed diagnosis for future patients.

The pathologist will be able to see the tissues as the surgeon operates and, over a two-way communication system, can tell the surgeon just where to remove a bit of tissue for microscopic examination in suspected cancer cases, for example. The bit of tissue will be tubed to the pathology laboratory and examined. The pathologist can then tell the surgeon whether or not cancer is present. It is hoped that the television camera can be focused on the microscope so that the surgeon in the operating room can see the cancer cells on his TV screen as the pathologist sees them under the microscope.

The laboratories in the new building are designed on the module plan, that is, in units with a central service core. For greater flexibility and adaptation to various uses, the partitions are of movable steel and the laboratory furniture has plumbing and other fixtures built right into it so it can be moved without leaving holes in the floors.

The electric power supply will come in dual feeders from the city service, with an accessory generator that "kicks on" automatically if either of the two feeder supplies fails.

Light and colors, from pastel to bright shades, varying from floor to floor are used to offset the physiological and psychological effect of the lack of windows in the main building.

A tunnel connects the hospital to the building, entering the pathlogy building near the autopsy section.

Classroom, a small auditorium and a canteen or cafeteria are provided in addition to the diagnostic and research laboratories.

Edgar S. Vasquez, resident engineer for the Corps of Engineers, conducted the Washington Society of Engineers on a tour of the capital city's first atomic blast resistant building.

Science News Letter, June 5, 1954

## Questions

ENTOMOLOGY—When is the best time to kill wasps? p. 360.

□ □ □

GENERAL SCIENCE—How is the draft affecting training of scientists? p. 365.

□ □ □

GEOLOGY—How can the Colorado Plateau now be mapped for uranium ores? p. 361.

□ □ □

PSYCHOLOGY—When is the best time to learn languages? p. 356.

□ □ □

PUBLIC HEALTH—Why is TB a particular problem among merchant seamen? p. 361.

□ □ □

TECHNOLOGY—How has rubber recently been vulcanized? p. 365.

□ □ □

*Photographs:* Cover, Fremont Davis; p. 355, Boeing Airplane Company; p. 357, Hawaii Press Bureau; p. 358, George MacKown; p. 359, Jon Brenners; p. 368, Eastman Chemical Products, Inc.

MEDICINE

# Bigger Fight Against TB

➤ A BATTLE call for a stepped up fight against tuberculosis was issued at the meeting of the National Tuberculosis Association in Atlantic City.

From a fourth to a third of the U. S. population is harboring tuberculosis germs, Dr. J. Arthur Myers of the University of Minnesota Medical School declared. Both he and Dr. Philip E. Sartwell, of the Johns Hopkins University School of Hygiene and Public Health, Baltimore, pointed out that the decline in tuberculosis cases has not kept pace with the decline in deaths from the disease.

The death rate has been forced down from 188 per 100,000 population in 1904, when the NTA was founded, to an estimated 13 per 100,000 in 1953. However, the number of active cases in this country is estimated at 400,000, and the disease is attacking approximately 110,000 persons a year.

Improvement in treatment, especially the new anti-TB drugs, probably is the reason for the decline in deaths, Dr. Sartwell said. More people recover from tuberculosis today. But, Dr. Myers pointed out, the third to fourth of the population harboring TB germs today will be tomorrow's patients who are not only sick but a source of infection to others.

He urged wider use of the tuberculin skin test to find the infected persons before the disease develops.

Earlier, the tuberculosis fighters heard Dr. Harley Williams of London, England, call tuberculosis "probably the most important tropical disease today." The problem, he said, is greatest East of Suez, where the death rate may be 500 per 100,000 population. He urged Western nations to share their expert knowledge of preventive medicine with the rest of the world.

"In dealing with countries where tuberculosis control is hardly begun, we have to realize that we are taking a decisive step," he said. "We are not only showing the way to conquer this disease, we are handing on the tradition of Western medicine. That tradition is based on the value of the human person as an individual. That value is a just one and has to be preserved. Such is the task of medical statesmanship."

Science News Letter, June 5, 1954

# • New Machines and Gadgets •

For sources of more information on new things described, send a self-addressed stamped envelope to SCIENCE NEWS LETTER, 1719 N St., N.W., Washington 6, D. C., and ask for Gadget Bulletin 729. To receive this Gadget Bulletin without special request each week, remit $1.50 for one year's subscription.

*MENDING KIT permits anyone to patch garments neatly and expertly at a relatively small cost. The kit includes several dies to cut the proper-sized hole around the damaged part of the article. The same die is used to cut a patch from some other part of the garment to fit that hole exactly. A plastic tape, applied to the under side, bonds with the cloth patch when heated properly with an electric iron.*

Science News Letter, June 5, 1954

*HOME KNITTING machine makes 36,000 stitches an hour on the average. It saves time and yarn, and turns out wide garments 20 times faster than hand knitting. Working with all gauges of wool or cotton, the machine can yield firm or loose knitting as required, with absolute uniformity of stitch.*

Science News Letter, June 5, 1954

*ANTI-SLIP SOLE tread is available for a variety of industrial boots, shoes and overshoes. Molded in neoprene rubber, the special tread has a squeegee action and provides sure-footed walking on wet, icy or oily surfaces. The tread was originally developed for use on Navy aircraft carrier flight decks.*

Science News Letter, June 5, 1954

*PLANT FOOD attachment for garden hoses holds a supply of a special powdered plant food and feeds it into the hose while the water is on. It is shown in the photograph. One filling will apply almost 200 pounds of liquid nutrients to lawn or garden in about 15 minutes from the butyrate plastic hopper.*

Science News Letter, June 5, 1954

*GRAY WINDOW glass can cut out as much as 90% of the sun's glare, but lets in warming infrared rays. Unlike tinted glasses, the gray glass does not distort colors that are seen through it.*

Science News Letter, June 5, 1954

*SEED-SOWING DEVICE will distribute seeds evenly and quickly. A transparent, plastic tube, it has a palm-fitting cork at one end. After loading with seeds, the device is held in the hand and tapped lightly with a finger to make the seeds drop out in a steady stream.*

Science News Letter, June 5, 1954

*THUMB TACK applicator has a magnetic button which picks up tack and holds it in position. Then a quick press and the tack is in to stay. The tool also removes tacks and deposits them in a storage space.*

Science News Letter, June 5, 1954

*NEW OFFICE chair for typists has a base of phenolic plastic. The smooth surface prevents hosiery snags and shoe heels do not mar it. The swivel chair can be adjusted in various ways to suit the needs of the user.*

Science News Letter, June 5, 1954



## Do You Know?

There is said to be more *hafnium* in the earth's crust than copper, lead or zinc.

*Powdery mildew* attacks many plants, including roses, lilac, phlox, zinnias and dahlias; spraying or dusting regularly with sulfur, when the disease first appears, will provide effective control.

Electronic scientists have conquered the "fadeout" nuisance in car *radios* with special tubes that adjust the automatic volume control when going under bridges or through tunnels.

*Bathing suits* now are being made out of wallpaper specially processed for wet strength.

Only 10% to 15% of your *gas* bill is for the gas itself; the rest pays for having it piped to you and for service.

The newest types of electronic *detectors* not only warn of the presence of metal in foodstuffs, but will also stop the conveyor and drop a marker on the production belt.

The largest known *animal* is the blue whale.